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More Milk in Tanzania

CGIAR RESEARCH PROGRAM ON Livestock

More meat milk and eggs by and for the poor

Maziwa Zaidi Tanzania dairy development results and achievements

Amos Omore, Julie Ojango, Henry Kiara, Solomon Mwendia, An Notenbaert, James Rao, Edwin Kangethe and Alessandra Galiè

Maziwa Zaidi Tanzania Project Virtual Stakeholder Meeting, 5-7 October 2021

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Maziwa Zaidi Achievements – An Overview

Amos Omore

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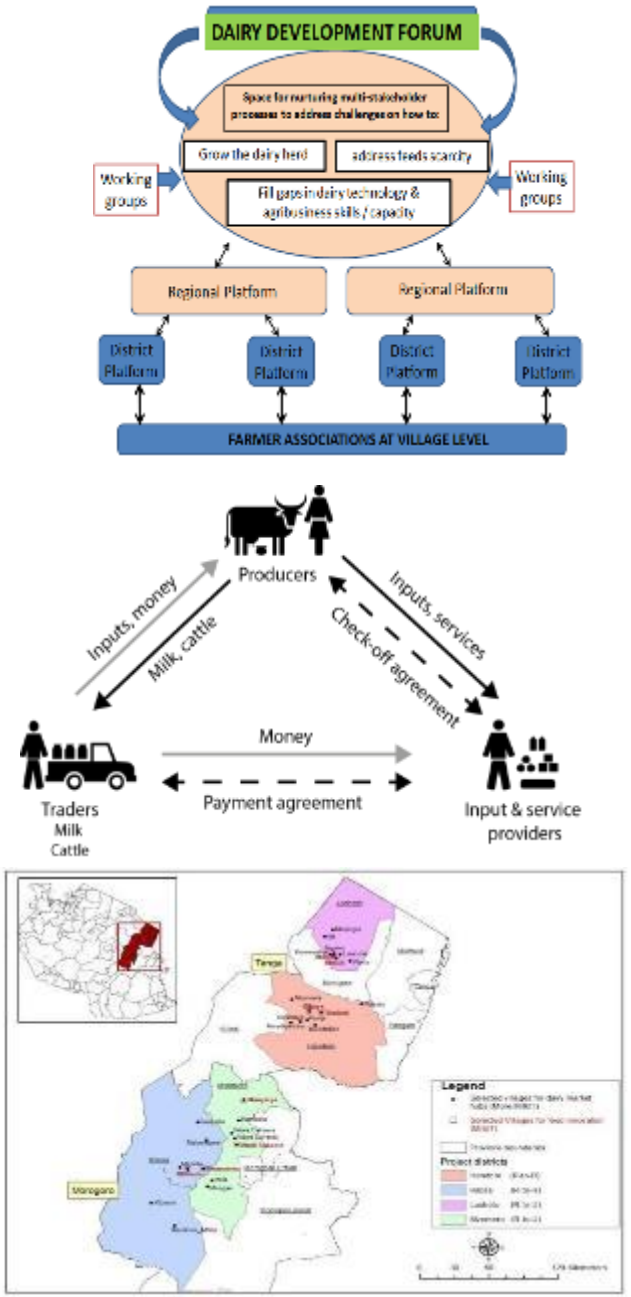
Previous focus and lessons

- Testing complementary multi-stakeholder processes (hubs and innovation platforms) to increase use of inputs and services, including CRP innovations
- Aimed to strengthen market linkages to over come market barriers; increase participation, revenue/income; improve livelihoods
- Targeted pre-commercial marginalized cattle-keeping men and women



- Village hubs were found useful for intended purposes and progress towards sustainability demonstrated; DDF ongoing
- Starting with formation of **farmer groups** is a slow process to create hubs; requires significant investments and time
- A quicker way would be to start with **agripreneurs** who integrate service delivery into their agribusinesses

Achievements from previous phase

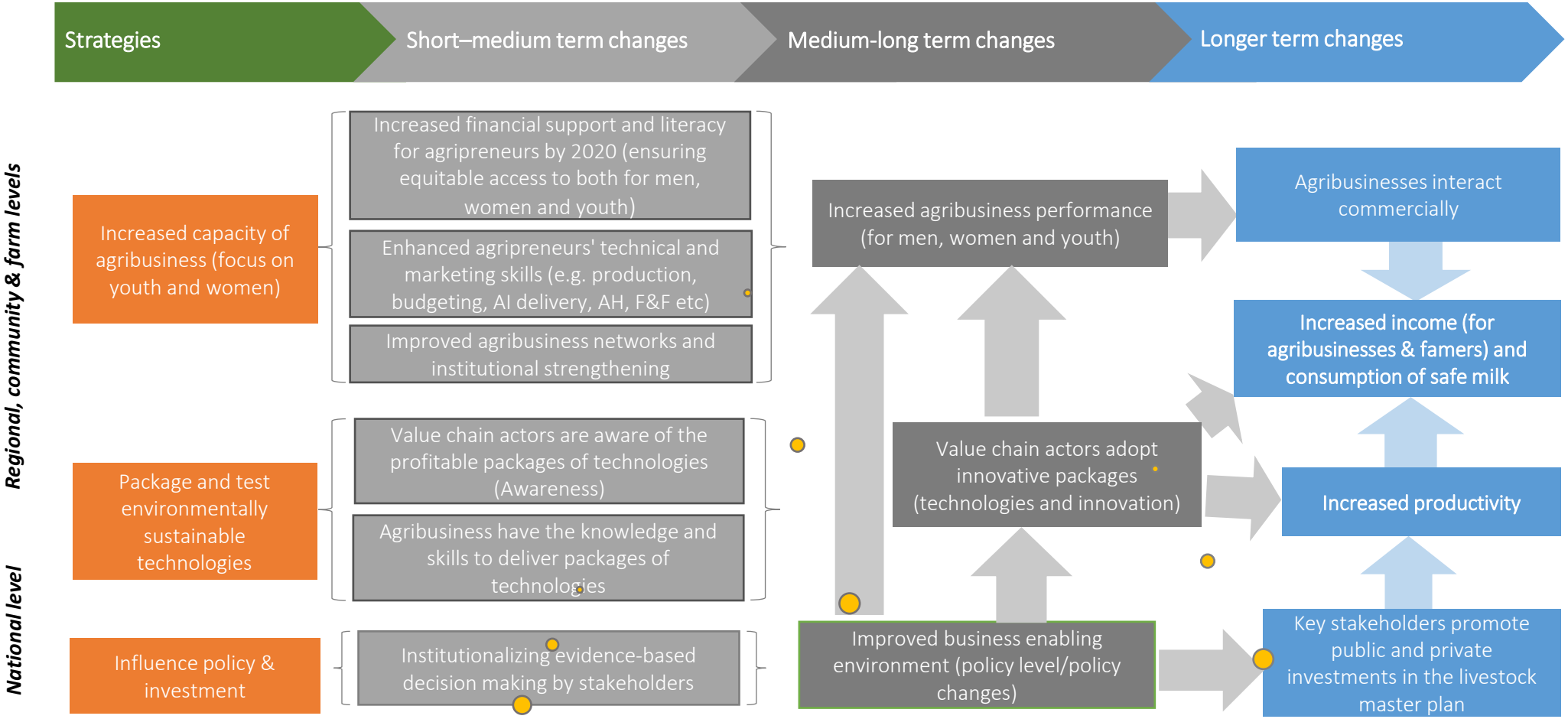
- Shown that skills training plays an important and perhaps immensely under-appreciated role in growing livestock agribusinesses
- A policy forum with partners in 2017 capitalized on five years of investments linked to specific innovations
- Inclusive investment opportunities for private and/or public investments were identified (ToC focus)
- Showcased innovations for scaling or investments along the VC: https://livestock.cgiar.org/2017/06/14/tanzania-investment-opportunities/
- More evidence captured here: https://maziwazaidi.org/publications/

Current Phase

- **Maziwa Zaidi II** Core Project: 'Agri-entrepreneurship, technology uptake and inclusive dairy development in Tanzania'
- Aims to quicken the process and enhance **sustainability** by engaging inclusive dairy **agribusinesses** as entry points to catalyze uptake of **integrated packages** by farmers; guided by a theory of change (review tomorrow)
- Capitalizing on outputs and outcomes from previous phase for further experimentation, incubation and communication (e.g., recent briefing on "Policy Actions for Climate Smart Dairy Development in Tanzania")

MZ Theory of change

Vision: Investors replicate dairy agribusinesses and **catalyze** an inclusive and **sustainable** development of the dairy value chain benefiting all value-chain actors



Monitor progress and make required changes in interventions

Assumptions to test:

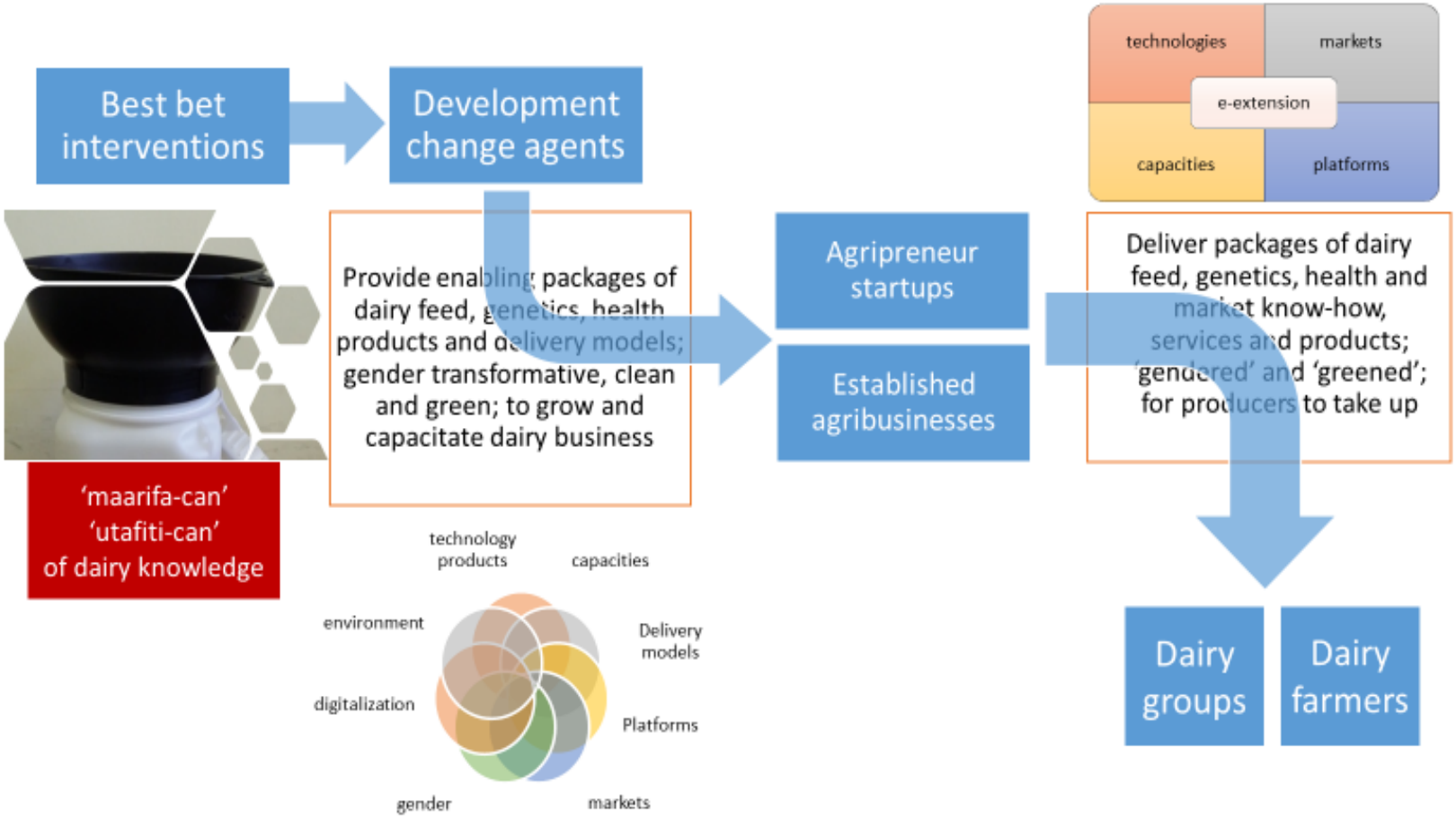
- Inclusive agribusiness approach will enhance uptake of technology packages
- Incubation and/or mentorship of agriprenuers contribute to improved business performance
- Integrated technology packages contribute to increased productivity, income and consumption of safe milk

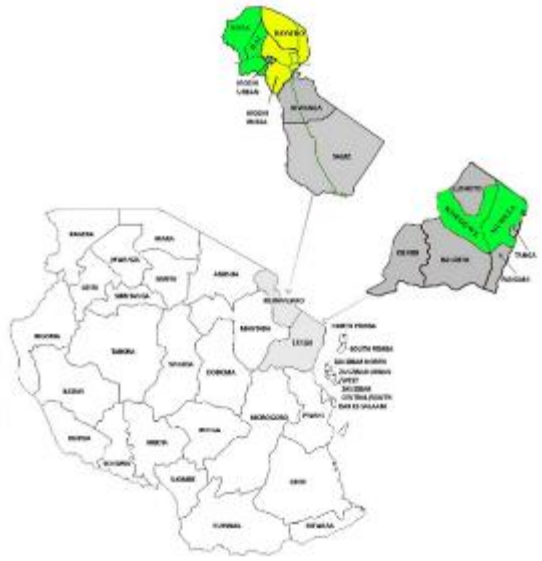
Top priorities identified in the packages

- **The priority technologies:**
  - ✓ **Brachiaria grass** (or other forage options),
  - ✓ **East coast fever vaccine**
  - ✓ **Artificial insemination**
  - ✓ **Manure management**
- **Main delivery mechanisms:** Capacitated agripreneurs

- Demand by entrepreneur
- Demand by farmer
- Recommendation by experts

Roles of actors in delivering MZ priority packages





Key elements

- Enabling packages for agripreneurs
- Delivery packages for producer groups & individual producers
- Packages must be clean, green

Current phase: Achievements

Increased capacity of agribusiness

- Gender responsive incubation boot camps conducted with tailored manuals, digital tools
- Feeds and forages: Farm demo plots to reinforce training and practice

Package and test environmentally sustainable technologies

- Agripreneurs are testing packaged best bet technologies
- Baselines data generated
- Technologies CLEANED: environmental footprints and ex-ante changes from intervention packages quantified

Covid-19 has delayed several activities

Influence policy & investment

- High-level policy briefing on actions for climate smart dairy development
- Engagements linked to TLMP implementation ongoing, staring with dairy VC
- Forage seed systems bottlenecks identified and are being addressed

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Maziwa Zaidi Genetics and breeding results and achievements

Julie Ojango

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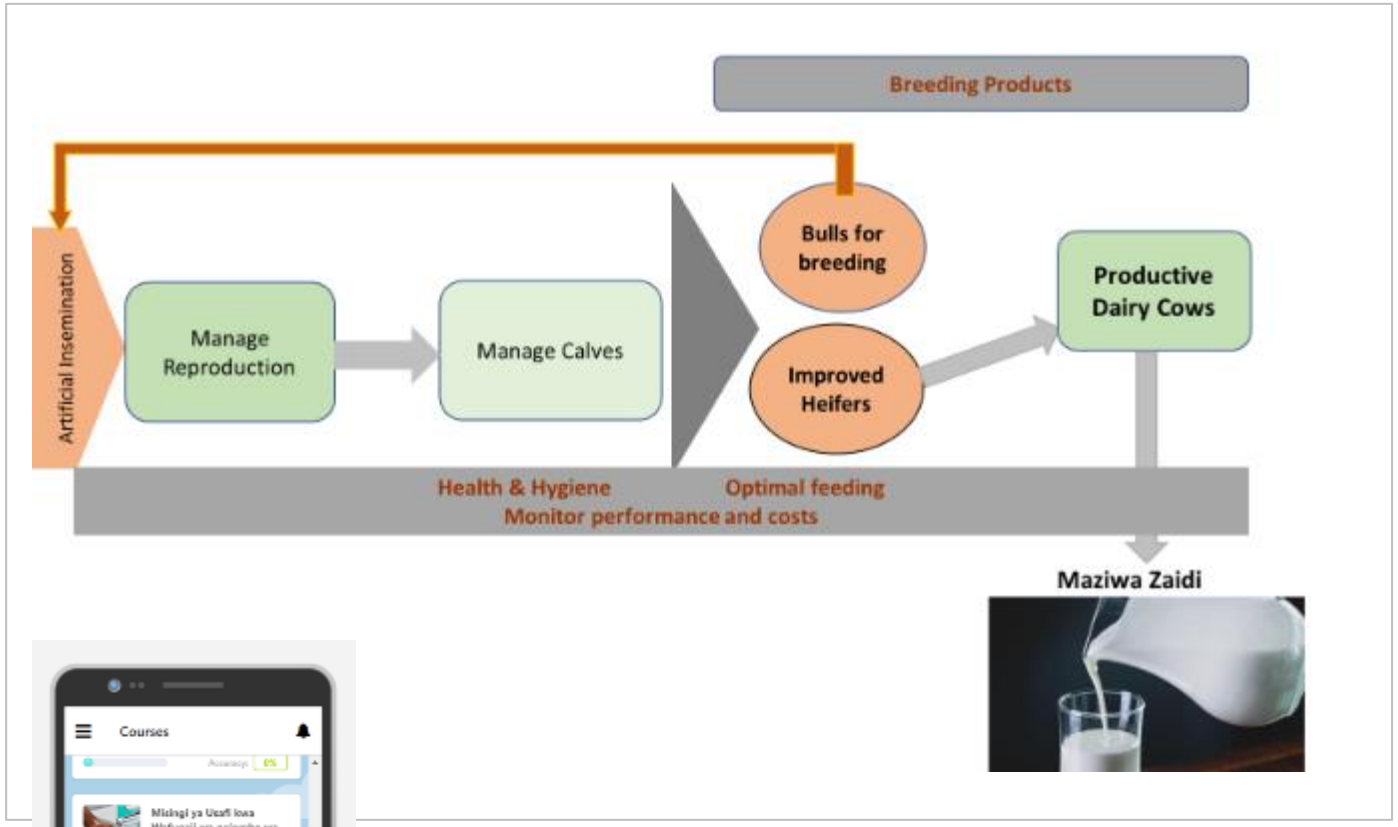
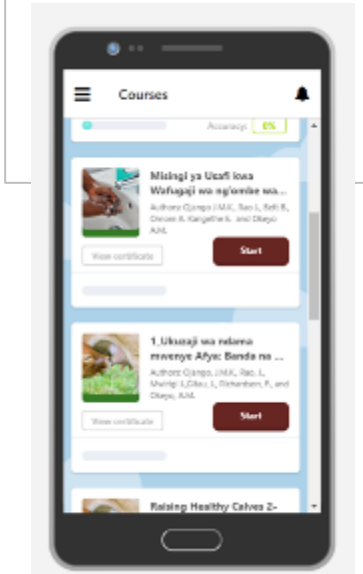
Key achievements

- **Agri-preneurs trained on ‘genetics-plus’ integrating other technologies to generate quality ‘breeding products’**
  - Producing these desired “breeding products” requires optimal health, hygiene and feeding management
  - Each technology has cost drivers which vary at the different product points
  - Contextual e-learning tools were created to help agri-preneurs and livestock keepers implement improved practices





Key achievements

- **Synthesized animal performance monitoring data was generated to guide choice of sires to produce better dairy animals for smallholder farms - in line with available feed and health management resources on smallholder farms**
  - Dairy productivity data collected through the ADGG platform was evaluated to generate an index for selecting better producing sires and cows in the smallholder systems
  - Agri-preneurs providing AI were trained how to use the index use to “select seed sires” and implement corrective mating to achieve desired traits
  - Top ranking Sires from the genetic evaluation were exhibited for the national dairy sector and recruited into National AI stations for broader use

Animal name	Faida
Animal ID	TZN000192814997
Date of Birth	2017
Region	Arusha
District	Meru District Council
Farm name	NAIC-BREEDING FARM
Mobile number	255757835393
gEBV milk	112
Index	1.246
Reliability	38%
Breed composition	
Bos Indicus	0.001%
Bos Taurus	99.999%

Learnings

- By integrating management practices and technologies on genetics and breeding, animal health and feed resources as a dairy '**productivity package**', the value of each individual technology is better appreciated. This has created demand for enhanced capacity development in evaluation and use of livestock data for improving productivity at the farm level, and for planning operations by other stakeholders in the dairy value chain (eg Dairy cooperatives, National AI institutions).
- The expanded breeding product outlay (heifers, breeding sires, milk) presents an opportunity for Agri-preneurs to embed breeding advisory services based on proven productivity to help drive demand for improved parents for next generation animals
- Both private and public sector service providers must be involved when enhancing capacity of actors to better support smallholder dairy production enterprises

Implications or significance

- Agri-preneurs providing breeding support services have a better understanding of the value of integrating different technologies with genetics and breeding interventions to enhance competitiveness in smallholder dairy production

- Additional support is required to mentor and monitor the Agri-preneurs in implementing the new knowledge to enhance the efficiency of milk production from animals reared under smallholder farming systems

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Maziwa Zaidi Animal Health results and achievements

Henry Kiara

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Key achievements

- **Achievement 1**

  Building on previous phase of Maziwa Zaidi (ITM2Scale) –developed ECF training material, regulations for trainers and trainees visioning workshop identified training needs in business and technical skills for other technologies

- **Achievement 2**

  Joint training of AI and ECF vaccination-focus on the business case for bundled services during bootcamp

- **Achievement 3**

  Identified 20 agripreneurs qualified to deliver AI and ECF to be given technical training and certified as ECF vaccinators-intended but not achieved in ITM2Scale

Region	S/No	Technology
Kilimanjaro	1	ECF Vaccination
	2	Brachiaria Technology
	3	Artificial Insemination (AI) Technology
	4	Manure/Compost Technology
Tanga	1	ECF Vaccination
	2	Brachiaria Technology
	3	Artificial Insemination (AI) Technology
	4	Manure/Compost Technology

A BUSINESS CASE OF ECF IMMUNIZATION AND ARTIFICIAL INSEMINATION BUNDLING

Learnings

- **1**

  Agripreneurs ranked training in business skills as a key component of their business growth

- **2**

  Bundling services is not a new concept. Agripreuers already bundle a number of services but opportunistically

- **3**

  Although AI and ECF are the easiest to bundle (similar clients, equipment) other services can easily be added- extension

Region	S/No	Topics
Kilimanjaro	1	Markets and Marketing Skills
	2	Customer Care Skills
	3	Bundling of extension services
	4	Record keeping
	5	Customer relation and retention
	6	Commercial Silage Production
	7	Opportunities in the Dairy Value Chain
Tanga	1	Markets and Marketing Skills
	2	Customer Care Skills
	3	Bundling of extension services
	4	Record keeping
	5	Customer relation and retention
	6	Commercial Silage Production
	7	Opportunities in the Dairy Value Chain

Implications or significance

- **1**

  Integrating technologies makes both technical and business sense. Livestock keepers are likely to observe productivity impacts leading to greater demand

- **2**

  Promoting private sector (agripreneurs) role in animal health delivery is likely to be more sustainable. Associated support structures-finances, infrastructure, policies, need to be promoted

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Maziwa Zaidi- Forages for livelihoods and environment: results and achievements

Solomon Mwendia

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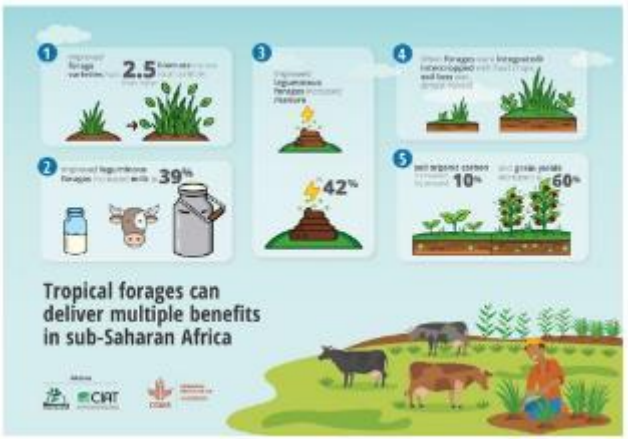
Key achievements

- **Achievement 1- Created livestock producers Interest - (youth, women) on use of improved forages**

  Productivity, environment and business cases



- **Achievement 2- Forage seed stakeholders engagement and recommendations**
  - Quantification of forage seed deficit in Tanzania. ‘Tanzania produced only 127.3 tons of forage seed in 2019/2020, while the demand is about 7 million tons per year
  - Interest from relevant Tanzania entities (TALIRI. TOSCI) to fast track forage registration with data from other East Africa countries

Learnings

- **1. Demonstrating forage benefits to end users creates interest for uptake**
  - Livestock producers may not be aware of improved technologies
- **2. Requires a moment for stakeholders to rekindle their complementarity**
  - After seed workshop TALIRI interest to connect with TOSCI to fast tract forage registration in TZ

Implications/ significance

- **1. Increased awareness on importance of improved forages key for adoption by livestock producers**

  Capacity building- knowledge & skills

- **2. Increased chances of fast-tracked registration of improved forages in Tanzania**
  - Chance of private sector engaging in forage seed business and improving forage seed access for increased livestock productivity

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Maziwa Zaidi Environment

results and achievements

An Notenbaert

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Key achievements

- **Mainstreaming of environmental issues**

  Training manual (with TALIRI and SUA) & incubation of agripreneurs

  Quantification of the environmental footprints of different types of dairy enterprises + how they are likely to change as results of intervention packages

- **Environment-productivity co-benefits of planted forages**

  Policy briefing

Learnings

- **Environmental footprints**

  Production and use of improved forages and proper manure management can act as a good climate change mitigation option in the study sites.

  The only pathway to prevent further expansion of land into forest areas in quest for livestock feeding is to introduce a high biomass/nutrient yielding forage.

  Improving soil cover and continuous replenishment of soil with nutrients is key to achieving a positive impact on soil health in all systems.

- **Co-benefits of forages**

Improved dairy feeding and forages offer win-wins between economics and the environments

Implications or significance

- **Environmental footprints**

The integrated intervention packages promoted by MZ show synergies as there are overall environmental efficiency gains.

Table 8: Environmental trade-offs following integrated packages

Farms	Land requirements		Soil impacts			Water impacts			GHG emissions		
	ha/yr	ha/MT FPCM	% Soil mining	Erosion (t soil/ha/yr)	Erosion (kg soil/ kg FPCM)	m3/year	m3/kg FPCM	m3/kg protein	t CO2 eq. / year	kg CO2eq/kg FPCM	kg CO2eq/kg protein
Intensive Dairy Muheza Highland	--	+++	+++	++	+++	+++	+++	++	---	+++	++
Intensive Dairy Muheza Lowland	+	+++	++		+++	+	+++	++	+	+++	++
Intensive Dairy Hai	---	+++	+++	+	+++	---	+++	+++	---	++	++

- **Co-benefits of forages**

Policy actions (cross-sectoral cooperation, invest in training/extension/knowledge dissemination and science-policy interface, etc.) are needed to bring the full potential of improved forages to scale.

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Maziwa Zaidi:

Livestock Livelihoods & Agrifood Systems - achievements & outcomes

James Rao

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What have we done, continue to do …..

- **1 Policies, foresight and systems analysis**

  Support development of Tanzania LMP

  Through systems dynamics modelling, generate evidence on priorities for dairy sector investment

- **2 Food and nutrition security through dairy production**

  Assessment of pathways through which value chain upgrading can enhance consumption of dairy products and other ASFs

- **3 Gender and social equity**

  Assessment of pathways for gender and social inclusion

- **4 Integrated technologies, practices & institutions for improved dairy production**

  Tested packages of integrated technologies

  Tested institutional models for enhance delivery of technologies – DMHs and lately agri-entrepreneurship approach

Key achievements

- **Increased investment in dairy sector – public and private**

  New investments in dairy, feed and veterinary services since 2017 possibly influenced by the LMP & evidence generated by Maziwa Zaidi – *Dalberg report & increased commercialization of feed production by farmers, youth included.*

  Generate evidence for policy engagement – *another set of dairy stakeholders are meeting in Dodoma today to prioritize investments for the dairy sector*

- **Positioning private sector at the core of dairy development**

  Incubation of APs as an entry point for delivery of integrated technologies – may catalyse further investment by private sector in Tanzania DVC – *reflections from the agripreneur incubation workshop*

- **Identification of pathways for gender and social inclusion**

  Gender transformative + responsive approaches identified

  Development of gender-responsive business models

  Development of WELBI – a tool for assessment of changes in women empowerment of women agribusinesses

- **Evidence on the relationship between VC participation by women and household nutrition**

  Participation in DMHs increases milk intake among women of reproductive age with the odds of consuming milk being 3.5 times greater for those who participated compared to non-participants

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Maziwa Zaidi Scaling scan results and achievements

Edwin Kangethe

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Key achievements

- **Achievement 1:conducted scaling scan**

  Scaling mindset

  Dimensions of scaling

- **Achievement 2: developed scaling ambition/s**

  Targets at flagship, and project level

- **Achievement 3: Scaling ingredients**

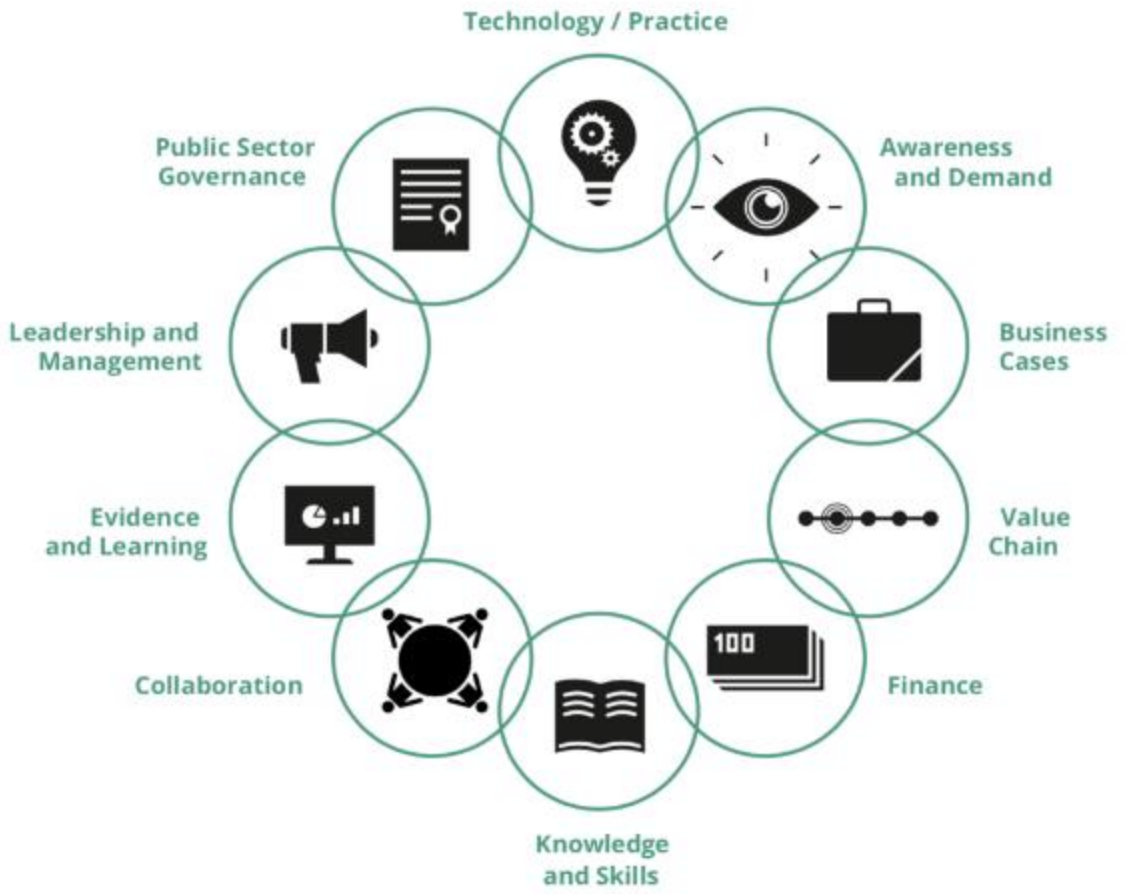
  Role of non technical elements to scaling

  Opportunities, bottlenecks

  at flagships, and project level

- **Achievement 3: scaling pathway/s**

  Use of both horizontal and vertical



Source: F. Jacobs, J. Ubels, and L. Woltering, *The Scaling Scan: A Practical Tool to Determine the Strengths and Weaknesses of Your Scaling Ambition* (PPPLab and CIMMYT. 2018).

Integrated scaling ambition

Maziwa Zaidi stakeholders will catalyze uptake of integrated dairy technology packages through capacity development interventions with focus on incubation, training and mentoring of agriprenuers, and public sector engagement in Tanga, Kilimanjaro regions of Tanzania. By December 2021, 40–50 agriprenuers will be capacitated to support more than 20,000 households on a commercially sustainable basis with an integrated package that may include several components such as:

1. increase artificial insemination (AI) delivery for improved dairy cattle from around 20% to 30% (of the 20,000 households)
2. increase availability of Brachiaria grass (or other improved forage options) from the current 2.5%–10% (of the 20,000 households)
3. increase ECF vaccination rates among improved dairy animals from current 10%– 25% of animals
4. improve manure management by installing, maintaining and facilitating financial arrangement for enhancing the technical capacity to use biodigesters and better manure management from current 0%–1% of more than 20,000 households.

Learnings

- **Use of scaling pathways**

  Use of horizontal and vertical pathways

  Working through partners to enhance sustainability

  Pathways vary across types of business lines

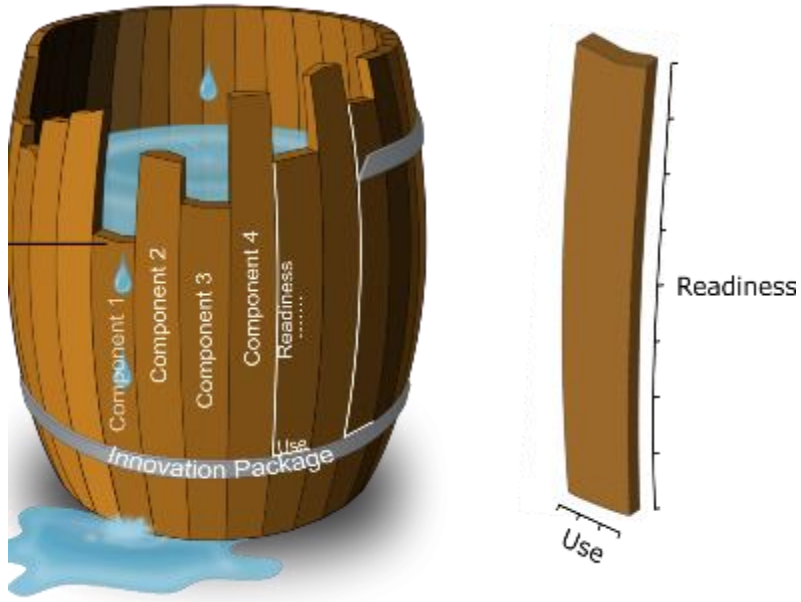
- **Role of nontechnical elements to scaling**

  Value chain, technology, learning

- **Scaling target components**

  When, Whom, What, How much, for Whom, Where

  Integrate different scaling ambitions



Implications or significance

- Scaling takes time
- Plan scaling from the beginning
- We have targets in the scaling ambition
- We can periodically assess

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Maziwa Zaidi:

Intgration - achievements & outcomes

James Rao

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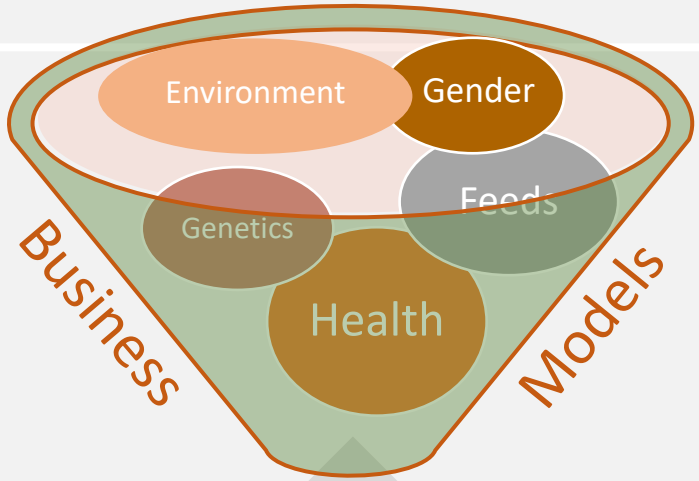
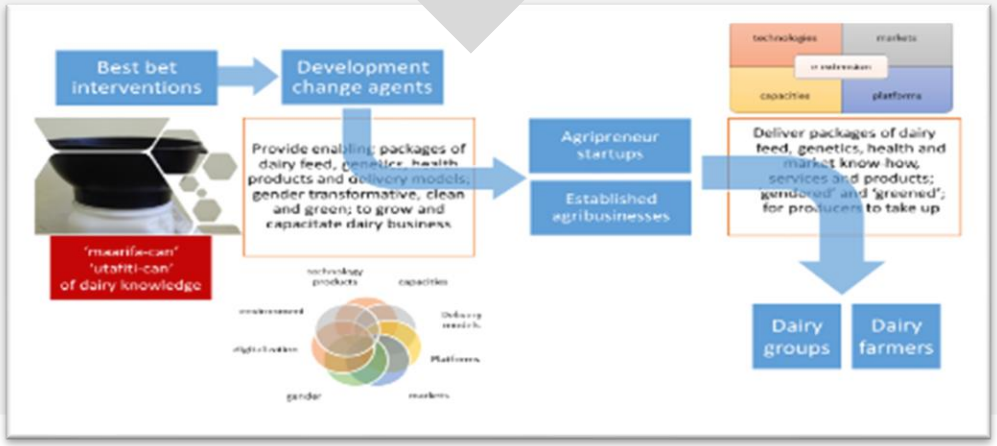
Integration 'glue' in Tanzania: dairy agripreneurs and demand driven technologies

Strategy	Integrated components: demand – driven	Key changes
a. Increase capacity of dairy agribusiness (focus on youth and women) through incubation to: ➢ Bundle technologies ➢ Form strategic alliances ➢ Be more client-seeking		i. Increased agribusiness performance: ➢ Increased product portfolio ➢ Bundled products/services ➢ Client orientation/outreach
b. Package and test profitable & environmentally sustainable technologies	Maziwa Zaidi partnership	ii. Value chain actors adopt innovative packages
c. Influence policy and investment		iii. Improved business enabling environment.

Increased Productivity, income & consumption

Goal: Investors replicate and catalyze an inclusive and sustainable development of the dairy value chain

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Inclusion

results and achievements

Alessandra Galiè, Immaculate Omondi, Esther Achandi, Farha Deba Sufian, Julie Newton

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Maziwa Zaidi vision

An inclusive and sustainable development of the smallholder dairy value chain benefitting all value-chain actors. …

… by supporting women and young agri-preneurs in particular, given cultural barriers hindering their participation in dairy development

Overall Research Question:

‘Under what conditions can women & youth-led businesses thrive’?

Key achievements

1. Development of gender-responsive business models

Delivering products that respond to needs of women and men

2. Development and implementation of the WELBI

Women's Empowerment in Livestock Business Index to quantify changes in empowerment of women agri-preneurs

3. Exploring gender norms around agri-preneurship

To appreciate formal and informal barriers hindering women and youth

4. Implementation of gender-responsive business incubation

To support women and young agri-preneurs by addressing structural barriers

Learnings: **Process** to create gender-responsive business models

Identify 'appropriate innovation packages':

- Product bundles that are preferred by women/young farmers e.g. digital info products to avoid mobility issues
- Product bundles that women/young agri-preneurs can easily sell
- Constraints and enablers in the environment women and youth perform their business

NORMS

Strengthen gender and youth – responsive capacity of:

- Agri-preneurs through gender-responsive business incubation
- Partners to implement gender-responsive interventions
- Policy makers for inclusive policy environment = 'employment' and 'social equity'

INCUBATION

Assess changes in empowerment

WELBI

Learnings: Women's Empowerment in Livestock Business Index (WELBI)

- 78 observations (39 M; W) – dairy and chicken
- Mean WELBI scores: 0.70 W; 0.72 M
- Main contributors to empowerment:
  - '*Self-efficacy*'
  - '*Input in productive decisions*'
  - '*control over use of income*'
- Main contributors to disempowerment:
  - '*work balance*' (W and M)
  - '*visiting important locations*' (W and M)
  - '*respect among household members*' *(W)*
  - '*attitudes towards domestic violence*' *(W)*

Learnings: norms facing women and young agri-preneurs

- Men have precedence over women in agri-preneurship
- Women need to prioritize family to business
  - taking care of household responsibilities and giving free labour for dairy related production
  - Give control of business to their husbands if that will make him look successful in the community
- Women to keep financial issues confidential even when unfairly treated by their spouses
- Gendered approaches to agri-preneurship and norms
  - In business, young men can perform 'traditionally prohibited' tasks (such as milking)
  - In business, young women cannot break gender norms (no riding motorbikes, no providing AI services)

Learnings: Process for gender-responsive business incubation

Transformative action learning as the approach

Key components include:

- Aligning on core gender concepts
- Embedding gender concepts within the project ToC
- Unpacking the gender assumptions as a way to operationalise what gender integration entails for the project
- Exploring gender integration entry points within the lean business canvas

For who: consortium as a whole and service providers

How: Mixture of core foundation sessions and working sessions arranged around project implementation

Implications or significance

- **Responsive packages key components**:
  - Focus on gender and youth in technologies + institutions;
  - Address norms;
  - Engage policy-makers;
  - Capacity development of all actors
- **WELBI**: address contributors to disempowerment
- **Norms**: engage with formal and informal norms e.g. how can 'family' be a shared priority? Develop accommodative and transformative approaches
- **Business incubation**: not just training women and youth, but intentional addressing structural challenges to their participation & benefit

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The **CGIAR Research Program on Livestock** aims to increase the productivity and profitability of livestock agri-food systems in sustainable ways, making meat, milk and eggs more available and affordable across the developing world.

livestock.cgiar.org

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